out, which will ultimately give us a better conception of the processes connected with the formation and dissipation of fog—aviations greatest hazard. With an increasing number of aerological observations, local problems connected with the upper air such as temperature inversions, turbulences, eddies, unexplained wind directions, etc., can be charted and given serious consideration.

If the results of our studies have done nothing else, they have proved conclusively that death pockets, holes in the air, death spots, etc., are all phantasies of publicity seekers in the super-sensational Sunday supplements.

For a bureau in its infancy we have made rapid strides and there is little doubt in my mind that the solution of many of the problems of meteorology will be found in the records which we are accumulating.

A 12-YEAR RECORD OF HOURLY TEMPERATURES AT RICHMOND, VA.

By H. A. FRISE

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In presenting the 12-year record of hourly temperatures 1911–1922, the results are not offered as representing mean temperatures that are normal to this locality, but rather to show the magnitude of the difference between mean temperatures derived from but two points on the daily curve, the maximum and the minimum, and those derived from the mean of the 24 hours. For practical purposes the mean of the extremes is quite close to the true mean for a good part of the year, though for the warm months there is a considerable departure. There is no doubt that for all lengths of record the mean of the daily extremes departs most from the 24-hour mean. (See fig. 1.)

Whether the departure, say for July, is as great for a 40-year period as for one of but 10 years has not been determined because of the large amount of labor involved, but it is not believed that a long record would alter the comparative result of a 12-year record materially.

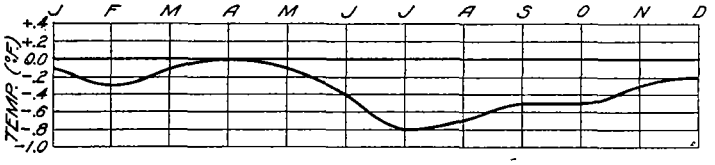

FIG. 1

Table 1 shows the winter, summer, and annual mean temperature as derived from means of the 24 hours for the years above named and figure 1 shows the variation of the means derived from the daily extremes from the means of the 24 hours.

In Table 2 I have given the summer and winter mean range, as computed from (*a*) the readings of self-registering maximum and minimum thermometers, and (*b*) from corrected readings of the thermograph for the warmest and the coldest hours of the day, respectively. For winter the hours of 7 a. m. and 3 p. m. have been chosen and for summer 5 a. m. and 3 p. m.

This table shows that the range computed from self-registering thermometers is for winter 17.9° and for summer 19.6°. The mean range between the warmest and the coldest hours, respectively, is for winter but 12.6° or 5.3° less than from self-registering thermometers as might be expected. In summer the difference is less, being but 2.4°. This is explained by the fact that the winter mean for January, for example, rises but 0.2° farther above the mean of the 24 hours than the minimum sinks below it, whereas in July the maximum, 87.1°, rises 1.4° farther above than the mean minimum falls below it. This excess in the maximum temperature explains the larger deviation of the July mean of the daily extremes from the mean of the 24 hours. It would be interesting to see whether this excess in the maximum temperature in summer holds for other places than Richmond. Strictly speaking, the mean of the 3 p. m. temperatures should not be the same as that of the daily maximum thermometer.

TABLE 2.—*Comparison of monthly range in temperature as obtained (a) from readings of maximum and minimum thermometers and (b) from readings of thermograph (corrected) at hours of highest and lowest temperatures, respectively*

FROM MAXIMUM AND MINIMUM THERMOMETERS

	Maximum	Minimum	Range		Maximum	Minimum	Range
December	48.0	31.0	17.0	June	83.4	63.3	20.1
January	47.3	29.3	18.0	July	87.1	67.7	19.4
February	48.7	29.9	18.8	August	85.8	66.4	19.6
Mean	48.0	30.1	17.9	Mean	85.4	65.8	19.6

FROM HOURLY MEANS OF WARMEST AND COLDEST HOUR

	Maximum 3p	Minimum 7a	Range		Maximum 3p	Minimum 5a	Range
December	46.4	34.2	12.2	June	82.0	64.3	17.7
January	44.8	33.1	11.7	July	85.5	68.7	16.8
February	46.6	32.6	14.0	August	84.4	67.5	16.9
Mean	45.9	33.3	12.6	Mean	84.0	66.8	17.2

TABLE 1.—*Mean hourly temperatures, the year, and for winter and summer at Richmond, Va., 1911–1922*

YEAR

A. M.												P. M.												Mean	Mean of extremes same period
1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Midnight		
53.0	52.2	51.5	50.9	50.3	50.2	51.0	52.9	56.2	59.1	61.5	63.4	64.9	65.8	66.1	65.7	64.4	62.5	60.4	58.6	56.7	55.1	54.6	53.7	57.5	57.9

WINTER

36.0	35.5	34.9	34.4	33.8	33.6	33.3	33.7	35.5	38.1	40.6	42.7	44.4	45.4	45.9	45.6	44.4	42.8	41.3	40.2	38.9	37.9	37.3	36.6	38.9	39.0

SUMMER

69.4	68.7	68.0	67.4	66.8	67.1	69.0	71.9	75.5	78.3	80.4	81.9	83.2	83.9	84.0	83.3	82.1	80.4	77.9	75.6	73.5	71.9	71.1	70.1	75.1	75.7